REMARKS

Claims 11-40 and 52-60 are pending in this application. By this Amendment, claims 23 and 56 are amended and claims 57-60 are added. Reconsideration in view of the above amendments and following remarks is respectfully requested.

The Office Action rejects claims 23-24 and 56 under 35 U.S.C. §102(b) as being anticipated by Timmons et al. (U.S. Patent No. 5,980,699) ("Timmons") and claims 23-40 under 35 U.S.C. §102(e) over Paz de Araujo et al. (U.S. Patent No. 6,110,531) ("Araujo"). Applicant respectfully traverses these rejections.

In particular, Applicant asserts that neither Timmons nor Araujo disclose or suggest a method of fabricating ceramics comprising forming the ceramic film by feeding an electromagnetic wave and active species of a substance which is at least part of raw materials of the ceramics, as recited in independent claim 23 and as similarly recited in independent claim 56.

Timmons teaches a method of producing silicon nitride ceramics and ceramic composites (Abstract, lines 1-2) by converting a pre-ceramic intermediate to a ceramic or a ceramic composite by subjecting the pre-ceramic intermediate to an electromagnetic energy source (col. 4, lines 32-35). However, Timmons does not teach subjecting the pre-ceramic intermediate to both an electromagnetic wave and active species of the substance which is part of the raw materials of the ceramics. In Applicant's invention, an advantage of subjecting the pre-ceramic intermediate to both an electromagnetic wave and active species lies in the resulting increase of migration energy in the film and allows ceramic formation at lower temperatures, thereby providing improved film quality, as described at page 4, lines 1-15.

In fact, Timmons uses, instead of the active species which are fed in applicants invention, an additive which is mixed with the ceramic precursor (pre-ceramic) before the

ceramic precursor is converted to a pre-ceramic intermediate (col. 2, lines 45-64). Timmons also teaches that the pre-ceramic intermediate then is converted to a ceramic by being subjected to an electromagnetic wave (col. 2, lines 64-67). In other words, Timmons does not feed a predetermined region with both an electromagnetic wave and active species of a substance which is part of raw materials for the ceramic, but feeds the pre-ceramic with only the electromagnetic wave, the active species being mixed with the pre-ceramic, not fed to the substrate. As such, Applicant asserts that independent claims 23 and 56 define patentable subject matter over Timmons. Claim 24 depends on claim 23 and hence defines patentable subject matter at least for its dependence on claim 23. Accordingly, Applicant respectfully requests that the rejection of claims 23-24 and 56 over Timmons be withdrawn.

Moreover, Araujo teaches a method of preparing an integrated circuit by chemical vapor deposition (Abstract). Araujo teaches using a UV source (8, Fig. 1) and a deposition chamber (124) in which one or more substrates (6) are held by a substrate holder (4) and are subjected to a source of vapor coming from a vaporized source (14). In Araujo, a vaporized source is generated and is carried by a carrier gas which may be inert or active and may contain a catalyst to increase the deposition rate (col. 5, lines 22-30). However, Araujo does not teach feeding the pre-ceramic with an electromagnetic wave, as recited in independent claim 23, and does not teach a first ceramic film having a different crystalline structure than a second ceramic film, as recited in independent claim 25. In fact, Araujo teaches forming several layers, then annealing them (col. 15, lines 43-46) to reconstruct microstructure in the layered superlattice material. Annealing a previously amorphous or non-crystalline phase will tend to re-crystallize the entire phase (all the layers), and hence will prevent having a first layer having a different crystalline structure than a second layer. As such, Applicant asserts that claims 23 and 25 and their dependent claims define patentable subject matter over

Araujo. Accordingly, Applicant respectfully request that the rejection of claims 23-40 over Araujo be withdrawn.

For at least the reasons discussed above, Applicant asserts that claims 23-40 and 56 define patentable subject matter.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 23-40 and 56 are earnestly solicited.

Furthermore, new claims 57 and 58 recite a method of fabricating ceramics and a ceramic fabrication device comprising *inter alia* a step for/means of feeding active species of a substrate which is at least part of raw materials for the ceramics to a predetermined region. In view of the above discussion, Applicant asserts that claims 57 and 58 should be interpreted under §112, sixth paragraph, and thus be limited to the structure and steps described in the specification and equivalents thereof. The applied prior art clearly does not disclose a structure or steps being the same as or equivalent to that described by Applicant's specification, and for at least this reason claims 57 and 58 define patentable subject matter.

Moreover, new claims 59 and 60 recite a method of fabricating ceramics and a ceramic fabrication device comprising *inter alia* a ceramic film being formed on a predetermined region which is smaller than the surface of the substrate. Araujo teaches a chemical vapor deposition (CVD) technique and apparatus where, because of the CVD, the entire surface of the substrate is covered. Timmons does not teach or suggest that the ceramic is formed in a predetermined region that is smaller than the surface of the substrate.

Finally, regarding the Election of Species Requirement of March 25, 2003, Applicant asserts that the three alleged "species" are not mutually exclusive. Species I is drawn to a method of fabricating a ceramic film, as is, for instance, recited in claim 11. Species II is drawn to a method of fabricating a first and second ceramic film (as recited, for instance, in

claims 15 and 25), but does not preclude forming one of the first and second ceramic films as specified by Species I (i.e., fabricating a ceramic film through several steps). Species II is drawn to a method of fabricating a ceramic film and crystallizing the film using an electromagnetic wave, as recited, for instance, in claim 23. Applicant asserts that Species III is not mutually exclusive with Species I, since the method described by Species I includes using an electromagnetic wave. Applicant also asserts that Species III is not mutually exclusive with Species II because Species II does not preclude fabricating at least one of the first and second ceramic film using an electromagnetic wave.

Accordingly, since the "species" are not mutually exclusive, Applicant asserts that the Patent Office has not identified proper species (see M.P.E.P. §806.04(f)), and that therefore the Election of Species Requirement is improper. As such, Applicant respectfully requests that the Election of Species Requirement be withdrawn, and that claims 11-22 and 52-55 be rejoined and examined.

Applicant asserts that withdrawn claims 11-22 and 52-55 also define patentable subject matter because neither Timmons nor Araujo, either alone or in combination, disclose or suggest a method of fabricating ceramics by feeding an electromagnetic wave and active species to a substrate as recited in independent claim 11, by forming a first and second ceramic film where the first and second ceramic film have different crystal structures as recited in independent claim 15, or by forming a ceramic film by liquid source misted chemical deposition as recited in independent claim 52 and 54.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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